



CofC

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patentees: Kung-Ha MOON, *et al.*

Issued: May 25, 2004

Patent No.: 6,741,297 B2

For: **CONTROL SIGNAL PART AND LIQUID CRYSTAL DISPLAY INCLUDING  
THE CONTROL SIGNAL**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**Certificate**  
JUN 23 2004  
**of Correction**

**REQUEST FOR CERTIFICATE OF CORRECTION  
UNDER 37 C.F.R. 1.322  
OFFICE MISTAKE**

Sir:

Transmitted herewith in duplicate is PTO Form 1050 - Certificate of Correction for the above-identified U.S. Patent correcting the Office mistake as shown in the enclosed Certificate of Correction form. The correction for the Office mistake is reflected in the attached copy of the Amendment Under 37 C.F.R. § 1.111. Also attached is a copy of the date-stamped postcard, evidencing the filing of the Amendment with the U.S. Patent and Trademark Office on October 10, 2003.

Also enclosed is a copy of the Letters Patent, with the requested correction marked in red ink.

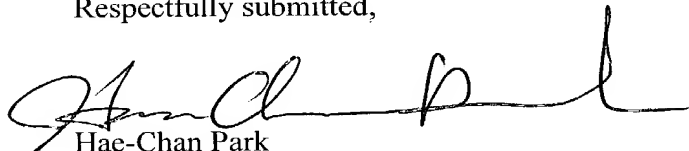
Since the above-mentioned matter was correctly shown in the Amendment, issuance of a Certificate of Correction is in order. Since this error was due to the Patent and Trademark Office, no fee is submitted herewith.

JUN 23 2004

Kung-Ha MOON, *et al.*  
Patent No.: 6,741,297 B2

If any error is determined to be on part of the applicants, please charge all  
necessary fees to attorney's deposit account no. 23-1951.

Respectfully submitted,



Hae-Chan Park  
Reg. No. 50,114

Date: June 17, 2004

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UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO.: 6,741,297 B2  
DATED: May 25, 2004  
INVENTOR: Kung-Ha MOON, *et al.*

It is certified that errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below.

Column 20,  
Line 22, Delete the term "end".

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PATENT NO.: 6,741,297 B2  
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FORM PTO 1050 (Rev. 2-93)

JUN 23 2004

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FORM PTO 1050 (Rev. 2-93)

JUN 23 2004



US006741297B2

(12) **United States Patent**  
**Moon et al.**

(10) **Patent No.:** **US 6,741,297 B2**  
(45) **Date of Patent:** **May 25, 2004**

(54) **CONTROL SIGNAL PART AND LIQUID CRYSTAL DISPLAY INCLUDING THE CONTROL SIGNAL**

(75) **Inventors:** **Kung-Ha Moon**, Suwon (KR);  
**Soo-Kyung You**, Cheonan (KR);  
**Je-Whan Whang**, Yongin (KR);  
**Young-Ik Kim**, Yongin (KR); **Sun-A Park**, Seoul (KR); **Seo-Young Kim**, Bucheon (KR)

(73) **Assignee:** **Samsung Electronics Co., Ltd.**, Suwon (KR)

(\*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 141 days.

(21) **Appl. No.:** **09/940,429**

(22) **Filed:** **Aug. 29, 2001**

(65) **Prior Publication Data**

US 2002/0054004 A1 May 9, 2002

(30) **Foreign Application Priority Data**

Aug. 29, 2000 (KR) ..... 2000-50548

(51) **Int. Cl.<sup>7</sup>** ..... **G02F 1/141; G09G 3/36**

(52) **U.S. Cl.** ..... **349/37; 349/54**

(58) **Field of Search** ..... **349/37, 149, 152, 349/192, 54; 345/87**

(56)

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\* cited by examiner

*Primary Examiner*—Toan Ton

*Assistant Examiner*—David Chung

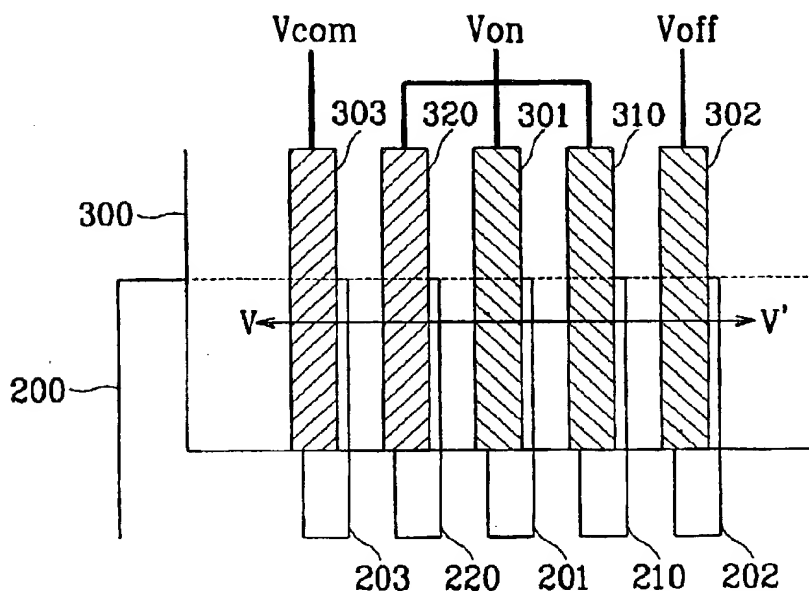
(74) *Attorney, Agent, or Firm*—McGuireWoods LLP

(57)

#### ABSTRACT

The present invention provides a control signal part and a liquid crystal display including the control signal part in which damage to wires due to electrolysis is prevented. A high voltage redundancy wire(s) is formed at one side or both sides of a high voltage signal wire, thereby to form equipotential around the high voltage signal wire. The control signal part includes a first signal wire that transmits a first signal voltage, a second signal wire that transmits a second signal voltage smaller than the first signal voltage, and a first redundancy wire that transmits the same voltage as the first signal voltage. The first redundancy wire is formed between the first signal wire and the second signal wire. The control signal part may also include a second redundancy wire that transmits the same voltage as the first signal voltage. Herein, the first redundancy wire is located at one side of the first signal wire and the second redundancy wire is located at the other side of the first signal wire.

37 Claims, 11 Drawing Sheets



Best Available Copy

19

28. The liquid crystal display of claim 12, wherein the first redundancy wire is formed of a conductive material for forming the data line.

29. The liquid crystal display of claim 12, wherein the first redundancy wire is formed of a conductive material for forming the pixel electrode. 5

30. The liquid crystal display of claim 12, wherein the first signal wire has a wire structure in which a first wire is connected to a second wire, the first wire being connected to the gate driving integrated circuit and the second wire being connected to the data driving integrated circuit. 10

31. The liquid crystal display of claim 30, wherein the first wire is formed of a conductive material for forming the gate line and the second wire is formed of a conductive material for forming the data line. 15

32. The liquid crystal display of claim 30, wherein the first wire is formed of a conductive material for forming the data line and the second wire is formed of a conductive material for forming the gate line.

33. The liquid crystal display of claim 12, wherein the first redundancy wire has a wire structure in which a first wire is connected to a second wire, the first wire being connected to the gate driving integrated circuit and the second wire being connected to the data driving integrated circuit. 20

34. The liquid crystal display of claim 33, wherein the first wire is formed of a conductive material for forming the gate line and the second wire is formed of a conductive material for forming the data line. 25

20

35. The liquid crystal display of claim 33, wherein the first wire is formed of a conductive material for forming the data line and the second wire is formed of a conductive material for forming the gate line.

36. The liquid crystal display of claim 12, wherein the signal wires of the control signal part include:

a lower wire having a pad and formed of a conductive material for forming the gate line;

a first insulating layer covering the lower wire;

a first contact hole exposing one end of the lower wire; and

an upper wire having a pad and being formed of a conductive material for forming the data line, the upper wire connected to the lower wire through the first contact hole.

37. The liquid crystal display of claim 36, further comprising:

a second insulating layer covering the upper wire;

a second contact hole exposing the pad of the upper wire;

~~and~~ a third contact hole exposing the pad of the lower wire; and

an auxiliary pad covering and connected to the pads of the lower and the upper wires through the second and third contact holes.

\* \* \* \* \*

Inventors: Kung-Ha MOON, et al.  
 Serial No.: 09/940,429  
 Filing Date: August 29, 2001  
 For: CONTROL SIGNAL PART AND LIQUID CRYSTAL DISPLAY INCLUDING THE CONTROL SIGNAL

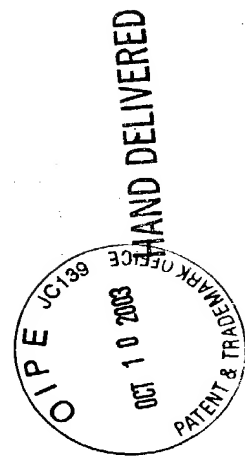
Date: October 10, 2003  
 Group Art.: 2871  
 Examiner: CHUNG, David Y.  
 Atty. Docket: 6192.0160.AA

Commissioner for Patents:

Please place the Patent Office receipt stamp hereon to acknowledge receipt of the following:

1. A Transmittal Letter;
2. A Reply and Amendment Under 37 C.F.R. §1.111; and
3. Two acknowledgement postcards.

Hae-Chan Park  
 Registration No. 50,114



Inventors: Kung-Ha MOON, et al.  
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HAND DELIVERED

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

*In re* Patent Application of:

Kung-Ha MOON, *et. al*

Serial No.: 09/940,429

Confirmation No.: 7061

Filed: August 29, 2001



Docket No.: 6192.0160.AA

Group Art Unit: 2871

Examiner: CHUNG, David Y.

**For: CONTROL SIGNAL PART AND LIQUID CRYSTAL DISPLAY INCLUDING  
THE CONTROL SIGNAL**

Mail Stop: Non-Fee Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**REPLY AND AMENDMENT UNDER 37 C.F.R. § 1.111**

Sir:

In response to the Non-Final Office Action mailed July 11, 2003 (Paper No. Not Given) ("Office Action"), Applicants respectfully request reconsideration of the application in view of the following Amendments and Remarks.

Applicants believe that no extensions of time are required at this time. If extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned for under 37 C.F.R. §1.136(a). Applicants believe that no further fees for net addition of claims are required at this time. Any fees required for further extensions of time and any fees for the net addition of claims are hereby authorized to be charged to our Deposit Account No. 23-1951.



**AMENDMENTS TO THE CLAIMS**

Please **AMEND** claims 1-12, 18, 24-29, 31, 32 and 34-37, as shown below.

The following is a complete list of all claims in this application.

1. (Currently Amended) A ~~control-signal-part~~ wire arrangement, comprising:  
a substrate; and  
a plurality of wires formed the substrate, the plurality of wires comprising:  
a first ~~signal~~ wire transmitting a first ~~signal~~ voltage and having a first end portion;  
a second ~~signal~~ wire transmitting a second ~~signal~~ voltage smaller than the first  
~~signal~~ voltage and having a second end portion; and  
a first redundancy wire ~~being~~ having a third end portion formed between the first  
~~signal-wire~~ end portion and the second ~~signal-wire~~ end portion.
2. (Currently Amended) The ~~control-signal-part~~ wire arrangement of claim 1, the  
plurality of wires further comprising a second redundancy wire having a fourth end portion,  
wherein the first end portion is arranged between the third end portion and the fourth end portion  
~~the first redundancy wire being located at one side of the first signal-wire and the second~~  
~~redundancy wire being located at the other side of the first signal-wire.~~
3. (Currently Amended) The ~~control-signal-part~~ wire arrangement of claim 1,  
wherein the first redundancy wire is connected to the first signal wire.

a lower wire having a pad and ~~being~~ formed by of a conductive materials material for forming the gate line;<sub>2</sub>

a first insulating layer covering the lower wire;<sub>2</sub>

a first contact hole exposing one end of the lower wire;<sub>2</sub> and

an upper wire having a pad and being formed by of a conductive materials material for forming the data line, the upper wire being connected to the lower wire through the first contact hole.

37. (Currently Amended) The liquid crystal display of claim 36, further comprising:  
a second insulating layer covering the upper wire;<sub>1</sub>  
a second contact hole exposing the pad of the upper wire;<sub>1</sub> and  
a third contact hole exposing the pad of the lower wire;<sub>2</sub> and  
an auxiliary pad covering and being connected to the pads of the lower and the upper wires through the second and third contact holes.


**CONCLUSION**

Applicants believe that a full and complete response has been made to the pending Office Action and respectfully submit that all of the stated objections and grounds for rejection have been overcome or rendered moot. Accordingly, Applicants respectfully submit that all pending claims are allowable and that the application is in condition for allowance.

Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact the Applicant's undersigned representative at the number below to expedite prosecution.

Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully submitted,

  
Hae-Chan Park  
Reg. No. 50,114

Date: October 10, 2003

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